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EXAMINER	
BELLO, AGUSTIN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/749,395	ASSEH ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-59 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-59 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 December 2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 4.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. New corrected drawings are required in this application because each page of the drawings has a large vertical blank space cutting through the drawings. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 3, 10, 11, 17, 18, 23, 24, 25, 26, 36, 42, 46-50, 56, and 57 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 12-16 of U.S. Patent No. 6,501,879. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the patent and the application claim both single and plural wavelength selective coupler having the same structure, including gratings, the wavelength coupler being tunable with adjustable mirrors. The

application differs from the patent in that it fails to specifically teach first and second deflectors each deflecting light of a different polarization. However, deflectors that deflect light of different polarizations are well known in the art and would have been obvious to one skilled in the art at the time the invention was made. One skilled in the art would have been motivated to use deflectors of the type claimed in the patent in order to have the ability to couple different modes of light from the optical fiber at different locations.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 22 recites the limitation "the channel balancing" in line 28. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 3, 4, 7, 17-19, 22, 23, 27, 29, 31, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by MacDonald (U.S. Patent No. 4,466,694).

Regarding claims 1, 27, 29, 31, MacDonald teaches a method for channel selective power control of a wavelength division multiplexed optical. signal, the method including the steps of; selecting at least one channel within said optical signal having higher than a desired power level (reference numeral L1 in Figure 1); establishing a resonance to the selected channel (column 1 lines 39-55), the resonance providing a selection region where said selected channel has a substantially increased power density relative to channels out of resonance; and attenuating (column 1 lines 66-68) said selected channel a desired amount by adjusting the properties of said selection region.

Regarding claim 3, McDonald teaches a method as set forth in claim 1, in which the step of establishing a resonance comprises the steps of providing an external resonator (reference numeral 3 in Figure 1), which is defined by a first (reference numeral 4 in Figure 1) and a second mirror (reference numeral 5 in Figure 1), said first and said second mirror being provided outside and on opposite sides of a waveguiding structure (reference numeral 1 in Figure 1), preferably an optical fibre (column 2 lines 22-23), carrying the optical signal; and deflecting light (via grating reference numeral 2 in Figure 1) between the waveguiding structure and the external resonator, said deflecting being effected by a deflector (reference numeral 2 in Figure 1) provided in said waveguiding structure.

Regarding claims 4 and 19, MacDonald teaches the method as set forth in claim 1, in which the step of attenuating is performed by introducing a loss in the selection region (column 1 lines 56-62).

Regarding claim 7, MacDonald teaches a method as set forth in claim 4, in which the step of attenuating is performed by making the selection region leaky, light thereby being caused to leak out of the same (column 1 lines 56-62).

Regarding claim 17, MacDonald teaches a method as set forth in claim 1, in which the resonance to the selected channel is established by arranging one or several Bragg gratings (reference numeral 2 in Figure 1) inside a waveguiding structure, preferably an optical fibre (column 2 lines 22-23), carrying the optical signal.

Regarding claim 18, MacDonald teaches a method as set forth in claim 17, in which the resonance is established by arranging a chirped Bragg grating in the waveguiding structure, said grating being resonant to different wavelength channels at different portions along the same (as seen in Figure 4).

Regarding claim 22, MacDonald teaches a method as set forth in claim 3, in which the deflector is provided within an internal resonator (column 3 lines 22-24) in the waveguiding structure, thereby enhancing the spectral selectivity o£ the channel balancing.

Regarding claim 23, MacDonald teaches a method as set forth in claim 3, further comprising the step of tuning the external resonator to the wavelength of the selected channel (column 1 lines 39-42 and column 4 lines 8-21).

Regarding claim 32, MacDonald teaches a method as set forth in claim 27, in which the step of removing a controlled amount of power from the selected channel is performed by introducing a variable loss in the selection region (column 1 lines 56-62 and column 4 lines 8-21).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 2, 5, 6, 20, 28, 30, 33, 35, 36, 41-43, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonald.

Regarding claims 2, 28, 35, MacDonald teaches a method as set forth in claim 1, but differs from the claimed invention in that MacDonald fails to specifically teach that the step of selecting at least one channel having higher than a desired power level is performed by means of spectrum analysis of, the wavelength division multiplexed optical signal. However, spectrum analysis of signals is very well known in the art and one skilled in the art would clearly have recognized spectrum analysis as a means for determining which channels had a higher than desired power level. Furthermore, MacDonald teaches that the invention is applicable in wavelength division multiplex systems. Spectrum analysis of signals in wavelength division multiplex systems is very well known in the art. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to determine which channels had a higher than desired power level via spectrum analysis in the system of MacDonald.

Regarding claims 5 and 6, 33, MacDonald differs from the claimed invention in that MacDonald fails to specifically teach introducing an absorbing element in the selection region or introducing an absorbing element inside the external resonator. However, absorbing elements are very well known in the art. One skilled in the art would clearly have recognized that an

absorbing element could have been employed to absorb or dissipate the power of the deflected channel. Furthermore, MacDonald appears to suggest an absorbing element (cavity filling indicated by reference numeral 3 in Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use an absorbing element either inside the external resonator or in the selection region to absorb or dissipate the power of the deflected channel.

Regarding claim 20, MacDonald differs from the claimed invention in that MacDonald fails to specifically teach the selection region is made leaky by bending a selected portion of the waveguiding structure, light of predominantly the selected channel thereby being caused to leak out from the selection region. However, MacDonald does teach that power leaks out of the resonator (column 1 lines 16-62). Furthermore, it is well known in the art that bending an optical fiber causes light propagating within the fiber to be leaked out of the fiber. One skilled in the art would clearly have recognized that the selection region could have been made leaky by bending the selected portion of the waveguide structure such that the selected channel leaked out from the selection region. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to make the selection region leaky by bending a selected portion of the waveguiding structure, light of predominantly the selected channel thereby being caused to leak out from the selection region.

Regarding claim 30, McDonald differs from the claimed invention in that McDonald fails to specifically teach that the selection region is established outside the resonance. However, MacDonald teaches that the properties governing the external resonator can be varied by altering the device parameters, thereby suggesting that such a selection region could be established.

Furthermore, MacDonald contemplates a scenario where light is off resonance (column 4 lines 8-10). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to establish a selection region outside the resonance of the external resonator by varying the governing properties of the device as taught by MacDonald.

Regarding claim 36, MacDonald teaches a plurality of attenuators and a plurality of resonators, said attenuators and said resonators being arranged to attenuate a plurality of wavelength channels within a wavelength division multiplexed optical signal (see Figure 4).

Regarding claim 41, MacDonald teaches the resonator is an internal resonator arranged in the waveguiding structure, said internal resonator comprising a chirped Bragg grating (reference numeral 2 in Figure 4).

Regarding claim 42, MacDonald teaches providing an external resonator (reference numeral 3 in Figure 1), which is defined by a first (reference numeral 4 in Figure 1) and a second mirror (reference numeral 5 in Figure 1), said first and said second mirror being provided outside and on opposite sides of a waveguiding structure (reference numeral 1 in Figure 1), preferably an optical fibre (column 2 lines 22-23), carrying the optical signal; and deflecting light (via grating reference numeral 2 in Figure 1) between the waveguiding structure and the external resonator, said external resonator being coupled to said waveguide structure by a deflector (reference numeral 2 in Figure 1).

Regarding claim 43, MacDonald teaches that the attenuator is arranged to introduce a loss in the selection region (column 1 lines 66-68).

Regarding claim 45, MacDonald teaches a plurality of external resonators (Figure 4), but fails to specifically teach that the external resonators are coupled to a common channel of the

WDM signal thereby constituting a set of sub-resonators associated with said channel. However, due to the tunable nature of the plurality resonators, one skilled in the art would clearly have recognized that it would have been possible to tune the resonators to a common WDM signal thereby constituting a set of sub-resonators associated with said channel. One skilled in the art would have been motivated to do so in order to repeatedly filter a specific channel from a WDM signal. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to tune a plurality of external resonators to a common channel of the WDM signal thereby constituting a set of sub-resonators associated with said channel.

Regarding claim 46, MacDonald teaches the external resonator is adjustable in such way that the wavelength to which the external resonator is resonant can be tuned (column 1 lines 39-42 and column 4 lines 8-21).

11. Claims 8-11, 24, 34, 37-40, 44, and 47-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonald in view of Cush (U.S. Patent No. 6,665,459).

Regarding claims 8, 34, 44, 51, MacDonald teaches a method as set forth in claim 3, but differs from the claimed invention in that Cush fails to specifically teach that the step of attenuating is performed by changing the phase of the selected channel in the selection region relative to the phase of the selected channel in the waveguiding structure; thereby causing destructive interference on the selected channel. However, attenuation of a signal via destructive interference is fundamental concept of the art. As such, one skilled in the art would clearly have recognized that it would have been possible to perform attenuation on the input signal by changing the phase of the selected channel in the selection region relative to the phase of the selected channel in the waveguiding structure, thereby causing destructive interference on the

selected channel. Furthermore, MacDonald specifically discloses that the signal transmission, reflection, and interference properties of the device could be varied considerably by altering the device parameters (column 4 lines 15-19). Moreover, Cush, in the same field of endeavor, teaches that it is well known in the art that external resonators can be tuned so that standing waves are formed within the cavity. As such, it is clear that the external resonators such as those disclosed by MacDonald and Cush are capable performing attenuation of a signal by changing the phase of the selected channel in the selection region relative to the phase of the selected channel in the waveguiding structure, thereby causing destructive interference on the selected channel. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to alter the device parameters of the external resonator as taught by MacDonald to cause destructive interference as taught by Cush.

Regarding claims 9, 11, and 24, 52, the combination of references and Cush in particular teaches displacement of the first and second mirror with respect to waveguide (column 9 lines 37-43, column 11 lines 29-34, column 13 lines 28-36 of Cush).

Regarding claims 10 and 53, the combination of references and Cush in particular teaches that the phase of the selected channel is changed by altering the refractive index in at least some portion of the external resonator, thereby altering the optical path length in the resonator (column 9 lines 44-47).

Regarding claims 37 and 47, MacDonald differs from the claimed invention in that MacDonald fails to specifically teach a controller, said controller being arranged to receive, from the spectrum analyzer, information identifying the at least one channel having higher than a desired power level, and to control the attenuator to provide a desired level of attenuation to said

at least one channel. However, Cush teaches that a controller is involved in the attenuation of channels by an external resonator (column 11 lines 24-34). One skilled in the art would clearly have recognized that a well known spectrum analyzer could have provided information identifying the at least one channel having higher than a desired power level, and controlled the attenuator to provide a desired level of attenuation to said at least one channel. Furthermore, MacDonald teaches that devices are controllable (column 3 lines 1-5). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a controller, said controller being arranged to receive, from the spectrum analyzer, information identifying the at least one channel having higher than a desired power level, and to control the attenuator to provide a desired level of attenuation to said at least one channel.

Regarding claims 38-40, although the combination of references fail to specifically teach the spectrum analyzers in the positions claimed, spectrum analyzers themselves are very well known in the art. Furthermore, placement of spectrum analyzers upstream, downstream, or both and connecting them to an attenuator controller is well known in the art and would have been obvious to one skilled in the art at the time the invention was made. One skilled in the art would have been motivated to do so in order to monitor the signals input, output, or both and control attenuation of the signals accordingly.

Regarding claim 48, MacDonald and Cush teach that the resonator is controllable (column 3 lines 1-5 of MacDonald) such that the wavelength interval to which the resonator is resonant can be tuned (e.g. wavelength selectivity taught by both references), thereby allowing removal of power from different wavelength intervals at different instants (via Figure 4 of MacDonald).

Regarding claim 49, MacDonald teaches providing an external resonator (reference numeral 3 in Figure 1), which is defined by a first (reference numeral 4 in Figure 1) and a second mirror (reference numeral 5 in Figure 1), said first and said second mirror being provided outside and on opposite sides of a waveguiding structure (reference numeral 1 in Figure 1), preferably an optical fibre (column 2 lines 22-23), carrying the optical signal; and deflecting light (via grating reference numeral 2 in Figure 1) between the waveguiding structure and the external resonator, said external resonator being coupled to said waveguide structure by a deflector (reference numeral 2 in Figure 1).

Regarding claim 50, MacDonald teaches that the deflector comprises a blazed phase grating (reference numeral 2 in Figure 1) provided in a core of the waveguide.

Regarding claim 54, the combination of references differs from the claimed invention in that it fails to specifically teach introducing an absorbing element in the selection region or introducing an absorbing element inside the external resonator. However, absorbing elements are very well known in the art. One skilled in the art would clearly have recognized that an absorbing element could have been employed to absorb or dissipate the power of the deflected channel. Furthermore, MacDonald appears to suggest an absorbing element (cavity filling indicated by reference numeral 3 in Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use an absorbing element either inside the external resonator or in the selection region to absorb or dissipate the power of the deflected channel.

Regarding claim 55, the combination of references differs from the claimed invention in that it fails to specifically teach a controllable liquid crystal provided inside the external

resonator, the controller being operative to provide absorption by changing the transmittance of said liquid crystal. However, liquid crystals and their controllable properties of transmittance are very well known in the art. One skilled in the art would have been motivated to incorporate a controllable liquid crystal in the device of the combination of references in order further control the transmittance of selected channel. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a controllable liquid crystal provided inside the external resonator, the controller being operative to provide absorption by changing the transmittance of said liquid crystal.

Regarding claim 56, MacDonald teaches that the resonator is an internal resonator arranged inside the waveguide (column 3 lines 14-24), said internal resonator comprising at least one Bragg grating.

Regarding claim 57, MacDonald teaches that the resonator comprises a chirped Bragg grating (reference numeral 2 in Figure 4).

Regarding claim 58, the combination of references differs from the claimed invention in that it fails to specifically teach the selection region is made leaky by bending a selected portion of the waveguiding structure, light of predominantly the selected channel thereby being caused to leak out from the selection region. However, MacDonald does teach that power leaks out of the resonator (column 1 lines 16-62). Furthermore, it is well known in the art that bending an optical fiber causes light propagating within the fiber to be leaked out of the fiber. One skilled in the art would clearly have recognized that the selection region could have been made leaky by bending the selected portion of the waveguide structure such that the selected channel leaked out from the selection region. Therefore, it would have been obvious to one skilled in the art at the time the

invention was made to make the selection region leaky by bending a selected portion of the waveguiding structure, light of predominantly the selected channel thereby being caused to leak out from the selection region.

12. Claims 12-16, 21, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacDonald in view of Facq (U.S. Patent No. 5,307,437).

Regarding claims 12 and 21, the combination of MacDonald teaches or suggests the steps of deflecting the selected channel from a first waveguiding structure carrying the optical signal into an external selection region (as discussed above) and the step of attenuating the selected channel being performed by absorbing light in said selection region (as discussed above), but differs from the claimed invention in that Macdonald fails to specifically teach coupling the selected channel from the selection region into a second waveguiding structure. However, coupling of a selected channel from the selection region into a second waveguiding structure is well known in the art. Facq, in the same field of endeavor, teaches it is well known in the art to couple a selected channel from the selection region into a second waveguiding structure (Figure 5). Furthermore, MacDonald suggest that the selected channel could be coupled to another waveguiding structure in that MacDonald discloses that the selected channel could be detected or transmitted further (column 2 lines 55-58). A well known method in the art for further transmitting an optical channel is via a secondary waveguiding structure as evidenced by Facq. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to couple the selected channel from the selection region, as taught by Macdonald, into a second waveguiding structure as taught by Facq.

Regarding claim 13, the combination of Macdonald and Facq teaches the step of establishing a resonance comprises the step of providing an external resonator (reference numeral 3 in Figure 1 in MacDonald; reference numeral 28 in Figure 4 of Facq) enclosing both the first and the second waveguiding structures, said external resonator being defined by a first (reference numeral 4 in Figure 1 of MacDonald) and a second mirror (reference numeral 5 in Figure 1 of MacDonald) arranged outside and on opposite sides of the first and the second waveguiding structures.

Regarding claim 14, the combination of MacDonald and Facq teaches the step of establishing a resonance comprises the step of providing at least one Bragg grating (reference numeral 2 in Figure 1 of MacDonald and reference numerals 44, 45 in Figure 5 of Facq) in each of the first and the second waveguiding structures.

Regarding claim 15, the combination of MacDonald and Facq teaches at least one of the Bragg gratings is a chirped grating (reference numeral 2 in Figure 1 of MacDonald and reference numerals 44, 45 in Figure 5 of Facq).

Regarding claim 16, the combination of MacDonald and Facq teaches that the step of deflecting the selected channel from the first waveguiding structure is performed by means of a first blazed phase grating (reference numeral 2 in Figure 1 of MacDonald and reference numeral 44 in Figure 5 of Facq) in the first waveguiding structure, and the step of. coupling the selected channel into the second waveguiding structure is performed by means of a second blazed grating (reference numeral 45 in Figure 5 of Facq) in the second waveguiding structure.

Regarding claim 25, MacDonald differs from the claimed invention in that McDonald fails to specifically teach that the step of tuning the resonance is performed by tilting the external

resonator with respect to the waveguiding structure. However, tilting of an external resonator for the purpose of tuning is well known in the art. Facq, in the same field of endeavor, teaches it is well known in the art to tilt an external resonator for the purpose of tuning the resonance (Figure 11). One skilled in the art would have been motivated to do so in order to establish an all-or-nothing sensor. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to tilt an external resonator for the purpose of tuning the resonance.

13. Claims 26 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald in view of Cush and Facq.

Regarding claim 26, McDonald differs from the claimed invention in that McDonald fails to specifically teach that the step of tuning the resonance is performed by adjusting the separation between the first and the second mirror; and tilting the external resonator with respect to the waveguiding structure. However, Cush teaches it is well known in the art to tune the resonance of an external resonator by adjusting the separation between the first and second mirror (column 0 lines 0-0) while Facq teaches tuning the resonance of the external resonator by tilting the external resonator (Figure 11). Furthermore, MacDonald teaches that the properties governing the external resonator can be varied by altering the device parameters, thereby suggesting that tuning the external resonator could be performed by adjusting the separation between the first and the second mirror; and tilting the external resonator with respect to the waveguiding structure. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to perform tuning of the external resonator of the system of MacDonald by adjusting the separation between the first and the second mirror; and tilting the external resonator with respect to the waveguiding structure.

Regarding claim 59, the combination of MacDonald and Cush differs from the claimed invention in that it fails to specifically teach a light guiding probe is arranged within evanescent contact with the waveguide, light thereby leaking out from the resonator to said probe. However, as discussed above, MacDonald teaches that light leaks from the external resonator and further suggests that this light could be further transmitted. Furthermore, Facq teaches it is well known in the art to coupled light from one waveguide to another. One skilled in the art would clearly have recognized that it would have been possible to arrange a light guiding probe within evanescent contact with the waveguide, light thereby leaking out from the resonator to said probe. One skilled in the art would have been motivated to do so in order to take a small sample of the leaked light. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to arrange a light guiding probe within evanescent contact with the waveguide, light thereby leaking out from the resonator to said probe.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

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